CLAIMS:

1. A method for use in controlling the processing of components, the method comprising:

- assigning each component with a unique machine readable identification mark;
- providing data records representative of matching sets of the identification marks relating to at least two associated components; and
- providing on each component the unique machine readable identification mark assigned to said component, thereby enabling to identify whether the components to be processed relate to the matching set or not.

2. The method of Claim 1, wherein at least one of the components is a biological entity.

3. The method of anyone of Claims 1 to 2, comprising reading the identification mark, generating data indicative thereof; and analyzing the generated data to determine whether the identification mark belongs to the specific matching set or not.

4. The method of anyone of Claims 1 to 3, wherein the identification mark is an image readable mark.

5. The method of anyone of Claims 1 to 3, wherein the identification mark is readable by optically scanning the mark.

6. The method of Claim 4 or 5, wherein the identification mark is barcode.

7. The method of any one of preceding Claims, wherein said providing of the identification mark comprises attaching to the component a label carrying said identification mark.

8. The method of Claim 7, wherein at least one component is within a holder and said providing of the identification mark comprises attaching to component a label carrying said identification mark.

9. The method of any Claim 8, wherein said providing of the identification mark on the holder comprises printing said identification mark onto the holder.

10. The method of any one of preceding Claims, wherein the at least two associated components include a sperm entity and an oocyte entity belonging to the matching set, the processing being aimed at producing one or more embryos from the sperm entity and the oocyte entity.

11. The method of any one of preceding Claims, wherein the at least two associated components include a patient and an embryo belonging to the matching set, the processing being aimed at providing the embryo to the patient.

12. The method of any one of preceding Claims, wherein the at least two associated components include a biological entity and a corresponding record or file.

13. The method of any one of preceding Claims, wherein the at least two associated components include a biological entity and a holder.

14. The method of any one of preceding Claims 1 to 10, wherein the at least two associated components are biological entities and the method comprises placing the biological entities in an incubator unit to maintain them under predetermined environmental conditions.

15. The method of Claim 14, comprising monitoring the biological entities development while in the incubator.

16. The method of Claim 15, wherein said monitoring comprises acquiring images of the biological entities in the holders and analyzing data indicative of the acquired images.

17. The method of Claim 16, wherein said monitoring comprises selecting at least two of the biological entities in the holders for monitoring or processing procedure inside the incubator.

18. The method of Claim 17, wherein said selecting comprises analyzing the data indicative of the acquired images of the identification marks on the holders containing said at least two entities to determine whether they relate to the matching set.

19. The method of any one of Claims 12 to 18, comprising controlling the temperature condition of at least a biological entities' supporting stage inside the incubator.

20. The method of Claim 19, wherein said temperature control comprises continuously monitoring the temperature of the support stage, and upon detecting a change of the temperature of said stage from a predetermined value, providing circulation of fluid, heated to a predetermined temperature, in said supporting stage.

21. The method of Claim 20, wherein the fluid is liquid.

22. The method of Claim 21 wherein the liquid is water.

23. The method of any one of Claims 12 to 22, comprising controlling the gas condition of the biological entities located on a supporting stage inside the incubator.

24. The method of Claim 23, wherein said controlling of the gas condition comprises providing said stage with a cover that covers the entire stage surface on which the biological entities' containing holders are placed, except for a region defined by a recess made in the cover, relative displacement between the cover and the biological entities supporting surface thereby enabling to bring a selected one of the biological entities' holders to be located within said recess.

25. The method according to any one of Claims 12 to 24, comprising controlling the processes carried out inside the incubator by an external control system.

26. The method of any one of Claims 16 to 25, comprising imaging the holder with the biological entity with different magnifications.

27. A system for use in controlling the processing of biological entities, the system comprising:

- a support assembly for supporting at least one holder containing biological entities;
- an optical device operable to acquire an image of the holder and generating data indicative of at least an identification mark provided on the holder;

- a control system connectable to said optical system and operable to actuate the image acquisition and to analyze the data indicative of the acquired images, the control system having a memory utility for storing reference data representative of matching sets of biological entities' associated identification marks, and a processing utility preprogrammed to be response of said data indicative of the acquired images to analyze said data utilizing said reference data and identify whether the biological entities in at least two holders relate to a matching set or not.

28. The system of Claim 27 comprising an incubator unit for maintaining the biological entities under predetermined environmental conditions, and an optical monitoring system at least partly installed inside the incubator and operable to acquire images of the entities while under the environmental conditions of the incubator.

29. The system of Claim 28, wherein said incubator includes control means for controllably maintaining the predetermined environmental conditions.

30. The system of Claim 29, wherein said conditions include at least some of the following: temperature, humidity, CO_2 level, oxygen level, light intensity and relative humidity inside the incubator.

31. The system of Claim 30, wherein said temperature is about 36-37°C.

32. The system of Claim 31, wherein said temperature is maintained at 36.7°C.

33. The system according to Claim 31 or 32, wherein the CO_2 level is about 5%.

34. The system of any one of Claims 30 to 33, wherein the oxygen level is about 5%-25%.

35. The system according to any one of Claims 30 to 34, wherein the relative humidity is about 95%.

36. The system of any one of Claims 30 to 35, wherein the light intensity of said optical system when in operation is about 60mW.

37. The system of any one of Claims28 to 36, wherein said optical system comprises a single imaging system.

38. The system of Claim 37, wherein said imaging system is operable to provide variable magnification.

39. The system of Claim 39, wherein said optical system comprises at least two imaging systems with different optical magnifications.

40. The system of Claim 39, wherein said optical system comprises three imaging systems with different magnifications.

41. The system of Claim 40, wherein said three imaging systems operate with optical magnifications of x1, x10, x20, respectively.

42. The system of any one of Claims 38 to 41, comprising a monitor unit equipped with electronic multiplexer for simultaneous displaying images acquired with different magnifications.

43. The system of any one of Claims 38 to 42, comprising a drive assembly operable to provide a desired relative displacement between a support surface on which the biological entity containing holders are located and at least a lens arrangement of said optical system, so as to enable bringing the selected holder to an imaging position.

44. The system of any one of Claims 37 to 43, wherein the control system comprises a processor preprogrammed to analyze the data indicative of the acquired images of the entities in the holders to evaluate the entities' development.

45. The system of any one of Claims 37 to 44, wherein said imaging system is configured to enable three-dimensional imaging of the biological entity in the holder.

46. A label for attaching to a biological entity holder, said label comprising a machine readable identification mark assigned to a biological entity to be put in said holder and a pattern defining a plurality of spaced-apart sites for a plurality of the biological entity drops, respectively.

47. A holder for a specific biological entity, the holder carrying a machine readable identification mark assigned to said biological entity.

48. A cover arrangement to be used for covering a surface of a support stage for supporting biological entity containing holders in spaced-apart relationship, the cover being configured to cover the entire surface region intended for location of the biological entity containing holders, and being formed with a recess that has a size of about that of the holder and substantially not exceeding that of the space between the holders, relative displacement between the cover and the biological entity holders' supporting surface thereby enabling to bring a selected one of the biological entities' holders to be located within said recess in the cover.

49. A support stage for use to support a biological entity containing holder, the support stage comprising a temperature control arrangement mounted in the stage below a surface of the stage intended for supporting the holder, said temperature control arrangement comprising a heat sink unit for fluid circulation therethrough, said heat sink unit including at least one temperature sensor and being controllably connectable to an external heat sink unit to enable selective supply of fluid to said heat sink unit inside the support stage upon detecting that the temperature condition of the stage has changed.

50. The support stage of Claim 49, wherein the fluid is liquid.

51. The support stage of Claim 50, wherein the liquid is water.

52. A system for use in controlling the processing of biological entities, the system comprising:

- a supporting stage for supporting at least one holders containing a biological entity;
- an incubator unit for maintaining the biological entities under predetermined environmental conditions.
- an optical monitoring system operable to acquire images of the entities;
- a drive assembly operable to provide a desired relative displacement between said support stage at least a lens arrangement of said optical system, so as to enable bringing a selected holder to an imaging position.

53. The system of Claim 52, wherein the holders and at least part of the supporting stage and optical monitoring system are installed within the incubator.

54. The system of anyone of Claims 52 or 53 wherein the optical monitoring system is operable to acquire images of the entities while under the environmental conditions of the incubator.

55. The system of anyone of Claims 52 to 54, wherein said incubator includes control means for controllably maintaining the predetermined environmental conditions.

56. The system of Claim 55, wherein said conditions include at least some of the following: temperature, humidity, CO_2 level, oxygen level, light intensity and relative humidity inside the incubator.

57. The system of Claim 56, wherein said temperature is about 36-37°C.

58. The system of Claim 57, wherein said temperature is maintained at 36.7°C.

59. The system according to Claim 56 to 58, wherein the CO_2 level is about 5%.

60. The system of any one of Claims 56 to 59, wherein the oxygen level is about 5%-25%.

61. The system according to any one of Claims 56 to 60, wherein the relative humidity is about 95%.

62. The system of any one of Claims 52 to 61, wherein the light intensity of said optical system when in operation is about 60mW.

63. The system of any one of Claims52 to 62, wherein said optical system comprises a single imaging system.

64. The system of Claim 63, wherein said imaging system is operable to provide variable magnification.

65. The system of Claim 62, wherein said optical system comprises at least two imaging systems with different optical magnifications.

66. The system of Claim 65, wherein said optical system comprises three imaging systems with different magnifications.

67. The system of Claim 66, wherein said three imaging systems operate with optical magnifications of x1, x10, x20, respectively.

68. The system of any one of Claims 52 to 67, comprising a monitor unit equipped with electronic multiplexer for simultaneous displaying images acquired with different magnifications.

69. The system of any one of Claims 52 to 68, wherein the control system comprises a processor preprogrammed to analyze the data indicative of the acquired images of the entities in the holders to evaluate the entities' development.

70. The system of any one of Claims 52 to 69, wherein said imaging system is configured to enable three-dimensional imaging of the biological entity in the holder.

71. The system of any one of Claims 52 to 70 said supporting stage fukrther comprises a temperature control mechanism comprising continuously monitoring the temperature of the support stage, and upon detecting a change of the temperature of said stage from a predetermined value, providing circulation of fluid, heated to a predetermined temperature, in said supporting stage.

72. The system of Claim 71, wherein the fluid is liquid.

73. The system of Claim 72 wherein the liquid is water.

74. System of anyone of Claims 52 to 71, wherein the system further comprises a cover arrangement to be used for covering a surface of the support stage in spaced-apart relationship, the cover being configured to cover the entire surface region intended for location of the biological entity containing holders, and being formed with a recess that has a size of about that of the holder and substantially not exceeding that of the space between the holders, relative displacement between the cover and the biological entity holders' supporting surface thereby enabling to bring a selected one of the biological entities' holders to be located within said recess in the cover.